

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

2. (Previously Presented) A telecommunications system with a multi-carrier transmission scheme that dynamically allocates bandwidth among a plurality of service units, the system comprising:

a head end that transmits data over a transmission medium to the service units, the head end comprising a modem circuit for narrow band transmission in at least one transmission channel, each transmission channel including a number of subbands having a number of payload channels and a control channel in each subband;

a control circuit in the head end that assigns each service unit to a subband for transmission and receipt of data; and

the control circuit is further operable to allocate a payload channel to a service unit in response to a request for a service unit.

3. (Previously Presented) The system of claim 2, wherein the control circuit is operable assign a number of service units to each subband for selective use of the payload channels in the subband by the service units so as to increase the number of service units that can be coupled to the system.

4. (Previously Presented) The system of claim 2, wherein the transmission medium comprises a hybrid fiber-coax telecommunications system.

5. (Previously Presented) The system of claim 2, wherein the head end comprises at least one modem circuit for each transmission channel.

Claims 6-18. (Cancelled)

19. (Previously Presented) A method for allocating bandwidth in a telecommunications system that uses a multi-carrier transmission scheme with

transmission channels that include a number of subbands, each subband including a number of payload channels, the method comprising:

selectively assigning service units to the subbands such that the service units of the telecommunications system are substantially evenly distributed over the number of subbands of the system; and

selectively allocating payload channels within a subband to service units assigned to the subband.

20. (Previously Presented) The method of claim 19, wherein selectively assigning service units comprises assigning the service units based on at least one of a type of the service unit, a likely load on a control channel for the service unit, a number of available payload channels in a subband, and historical data on transmission quality over the payload channels of the subband.

21. (Previously Presented) The method of claim 19; wherein selectively assigning service units comprises assigning subbands to service units beginning with subbands substantially at the middle of the available bandwidth.

22. (Previously Presented) The method of claim 19, wherein selectively assigning service units comprises assigning one or more service units to a selected subband.

23. (Previously Presented) The method of claim 19, wherein selectively assigning service units comprises assigning at least two service units of different types to a selected subband.

24. (Previously Presented) The method of claim 19, wherein selectively allocating channels within a subband comprises:

allocating a first payload channel to a service unit in a subband of a transmission channel of the telecommunications system;

monitoring the quality of the first payload channel; and

when the quality of the first payload channel drops below a threshold, allocating a second, different payload channel to the channel unit.

25. (Previously Presented) The method of claim 24, and further comprising the step of deallocating the first payload channel after communication over the second payload channel is established.

26. (Previously Presented) The method of claim 24, wherein the step of monitoring the quality of the first payload channel comprises the step of deriving a probable bit error rate for the first payload channel.

27. (Currently Amended) The method of claim 26, wherein the step of deriving a probable bit error rate comprises the step of sampling the a parity bit of each n-bit word for of the payload channel.

28. (Previously Presented) The method of claim 24, wherein the step of allocating a second, different payload channel comprises the step of allocating a second payload channel in the same subband as the first payload channel.

29. (Previously Presented) The method of claim 19, and further comprising selectively reassigning a service unit to another subband when sufficient channels are not available to handle a request from the service unit.

30. (Previously Presented) A method for allocating bandwidth in a telecommunications system that uses a multi-carrier transmission scheme with transmission channels that include a number of subbands, each subband including a number of payload channels and at least one control channel, the method comprising:  
selectively assigning a first service unit to a subband located substantially at a center of the bandwidth; and

selectively assigning additional service units to the subbands such that the service units of the telecommunications system are substantially evenly distributed over the number of subbands of the system.

31. (Previously Presented) The method of claim 30, and further including:  
selectively allocating channels within a subband to service units assigned to the subband.
32. (Previously Presented) The method of claim 30, wherein selectively assigning a first service unit and selectively assigning additional service units comprises assigning the service units based on at least one of a type of the service unit, a likely load on a control channel for the service unit, a number of available payload channels in a subband, and historical data on transmission quality over the payload channels of the subband.
33. (Previously Presented) A telecommunications system comprising:  
a head end that transmits data over a transmission medium to a number of service units, the head end comprising a modem circuit for transmission in at least one of a number of subbands of a transmission bandwidth, each subband having a number of payload channels and a control channel;  
a control circuit in the head end that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands; and  
the control circuit is further operable to allocate a payload channel to a service unit in response to a request for bandwidth for a service unit.
34. (Previously Presented) A method for allocating bandwidth in a telecommunications system that uses a multi-carrier transmission scheme with transmission channels that include a number of subbands, each subband including a number of payload channels, the method comprising:  
selectively assigning a first service unit to a subband located substantially at a center of the bandwidth; and

selectively assigning additional service units to the subbands such that the load of the service units of the telecommunications system is substantially evenly distributed over the number of subbands of the system.

35. (Previously Presented) A method for allocating bandwidth in a telecommunications system that uses a multi-carrier transmission scheme with a number of subbands, each subband including a number of payload channels, the method comprising:

- determining at least one characteristic of a service unit; and
- selectively assigning the service unit to a subband based on the at least one characteristic such that the service units of the telecommunications system are substantially evenly distributed over the number of subbands of the system.

36. (Previously Presented) The method of claim 35, wherein determining at least one characteristic of a service unit comprises determining at least one of a type of the service unit, a likely load on a control channel for the service unit, and a likely load of the service unit.